

JUL 20 2000

526 Rec'd PCT/PTO 20 JUL 2000  
P-C-TForm PTO-1390  
(REV 11-98)U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICEATTORNEY'S DOCKET NUMBER  
160383.90180

**TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371**

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)

**09/600742**INTERNATIONAL APPLICATION NO.  
PCT/FR 99/00306INTERNATIONAL FILING DATE  
11 Feb 1999 (11.02.99)PRIORITY DATE CLAIMED  
13 Feb 1998 (13.02.98)

## TITLE OF INVENTION

PROCESS FOR TRANSMISSION OF DATA BETWEEN TWO NETWORKS IN PACKET MODE

APPLICANT(S) FOR DO/EO/US

Raphael ALOS

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☒ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US)
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An unsigned oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☒ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

**Items 11. to 16. below concern document(s) or information included:**

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☒ A FIRST preliminary amendment.  
☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☐ A change of power of attorney and/or address letter.
16. ☒ Other items or information: Return postcard

U.S. APPLICATION NO. (if known, see 37 CFR 1.55) <div style="font-size: 24pt; font-weight: bold;">09/600742</div>		INTERNATIONAL APPLICATION NO. PCT/FR 99/00306		ATTORNEY'S DOCKET NUMBER 160383.90180	
--	--	--	--	--	--

17. <input checked="" type="checkbox"/> The following fees are submitted: <b>BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)):</b> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO ..... <b>\$970.00</b>  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO ..... <b>\$840.00</b>  International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... <b>\$690.00</b>  International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) ..... <b>\$670.00</b>  International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) ..... <b>\$96.00</b>  <div style="text-align: right;"><b>ENTER APPROPRIATE BASIC FEE AMOUNT =</b></div>				<b>CALCULATIONS</b> PTO USE ONLY          <div style="border: 1px solid black; padding: 5px;">\$ 840.00</div>	
Surcharge of <b>\$130.00</b> for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				<div style="border: 1px solid black; padding: 5px;">\$</div>	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	5      -20 =	0	X \$18.00	\$	
Independent claims	1      -3 =	0	X \$78.00	\$	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$260.00	\$	
<b>TOTAL OF ABOVE CALCULATIONS =</b>				\$	
Reduction by 1/2 for filing by small entity, if applicable. A Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28).				\$	
<b>SUBTOTAL =</b>				\$	
Processing fee of <b>\$130.00</b> for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.429(f)).			+ \$		
<b>TOTAL NATIONAL FEE =</b>				\$	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). <b>\$40.00</b> per property			+ \$		
<b>TOTAL FEES ENCLOSED =</b>				\$ 840.00	
				Amount to be: refunded	\$
				Charged	\$

a. ☐ A check in the amount of \$     . 00     to cover the above fees is enclosed.

b. ☒ Please charge my Deposit Account No. 17-0055 in the amount of \$     . 00     to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 17-0055. A duplicate copy of this sheet is enclosed.

**NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.**

SEND ALL CORRESPONDENCE TO:

Michael J. McGovern  
 Quarles & Brady LLP  
 411 East Wisconsin Ave.  
 Milwaukee, WI 53202-4497

SIGNATURE  
  
 NAME  
  
 28,326  
 REGISTRATION NUMBER

Express Mail No. EL 549 849 697 US

PATENT

Docket No.160383.90180

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Alos  
Appl. No.: National Phase of PCT/FR 99/00306  
Filed: July 20, 2000  
For: PROCESS FOR TRANSMISSION OF DATA  
BETWEEN TWO NETWORKS IN A PACKET MODE

---

PRELIMINARY AMENDMENT

---

BOX PATENT APPLICATION  
Commissioner for Patents  
Washington, D.C. 20231

Sir:

Please enter the following preliminary amendment in the patent application transmitted herewith prior to calculation of the filing fee.

Amendment

IN THE SPECIFICATION:

Page 1, before line 1, insert and center the heading --BACKGROUND OF THE INVENTION--.

Page 3 (as amended in the PCT phase), after line 7 and before line 8, insert and center the heading --SUMMARY OF THE INVENTION--.

Page 4, before the first line, insert and center the heading --BRIEF DESCRIPTION OF THE DRAWINGS--.

Page 4, between lines 5 and 6, please insert and center the heading - DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS-.

Page 9, delete "Process for transmission of data  
between networks in packet mode" and center the heading  
"Abstract".

Page 9, last line, delete "Figure 3".

IN THE CLAIMS (as amended in PCT phase):

In claim 3, line 1, delete " and 2".

In claim 4, line 1, delete " to 3".


In claim 5, line 1, delete " to 4".

**Remarks**

The specification has been amended to insert  
headings at the proper places. The claims have been  
amended to remove multiple claims dependencies for  
purposes of calculating the filing fee.

Respectfully submitted,

By:



Michael J. McGovern  
Quarles & Brady LLP  
411 East Wisconsin Avenue  
Milwaukee, WI 53202-4497  
(414) 277-5000  
Attorney of Record

**Process for transmission of data  
between two networks in packet mode.**

Applications involving transmissions of data from terminals of the cellular radio telephone type such as those of the GSM network are undergoing rapid development. Among these applications, the applications which consist of accessing a computer network of the INTERNET type or accessing private INTRANET networks, with protocols of the IP type such as those used for INTERNET access are particularly promising for the future. These applications make it possible to offer users a number of services such as: messaging, interactive consultation of private or public information services, transfer of files or images, remote action or remote management and others.

One mode of accessing the INTERNET from such terminals consists of establishing, with an ISP point of access to the INTERNET (ISP: "Internet Service Provider"), a connection of the "circuit mode data transfer" type which reserves, on an access network such as the switched telephone network STN, a communication channel or resource throughout the duration of the connection. The standard protocols for access to the INTERNET are then implemented, for example: SLIP or PPP, IP, TCP or UDP and the like. They offer, in particular the addressing mechanisms necessary for sending packets of information between the terminal and its correspondent via the INTERNET. This mode of access in circuit mode has the advantage of offering a transfer time of minimal and guaranteed duration on the access network, since the communication channel is entirely reserved for the terminal. It is well adapted to the services demanding the maximum of the available pass-band on the access network, such as the transfer of large files or of images, and/or demanding the minimum of to-and-fro response time on the access network, such as interactive applications with multiple successive interrogations. The main disadvantage of this circuit mode resides in the fact that the applications having low demands on response time and those where the interrogations are infrequent mobilise the same pass-band provision means, whereas these means will remain unused for a large percentage of the time.

Another mode of accessing the INTERNET from such terminals consists of using the short

messages services or possibly the USSD (Unstructured Supplementary Service Data) offering a shorter transfer time than the SMS. This mode presents the advantage of using the access network in packet or datagram mode which is more coherent with the transport mechanisms of the INTERNET network. The communication resource on the access network is used in a more optimised manner because it is momentarily freed for other terminals when there is no information to be transmitted. It is thus preferable for applications having low demands on the response time and for those where the interrogations are infrequent.

Since, in packet mode, a single channel is used in shared time by various communication means, each packet comprises, in addition to the useful data to be transmitted, the address of its sender and the address of the recipient and possibly other service data such as an order number, for example.

The service data being of fixed volume, they have associated with them a volume of useful data sufficiently large for the whole packet to be essentially composed of useful data, otherwise the advantage of the packet mode would be lost.

However, the packets of Short Messages Services SMS permit only the transmission of small packets and thus do not permit rapid transmission of a large volume of data from an INTERNET server, for example.

For this reason, INTERNET access in packet mode would *a priori* appear to be impossible. More precisely, if each INTERNET packet of useful data and signalling were transported in the limited field reserved for the useful data of a SMS packet, the INTERNET signalling would leave too little space in this field for the useful INTERNET data. The alternative possibility consisting of transporting the INTERNET packet in the signalling

NEW PAGE 3 FILED IN RESPONSE TO THE FIRST WRITTEN OPINION

field of the SMS packet is impossible because this packet is too small.

EP-A-0 777 394 discloses a process for transmission of electronic messages of an INTERNET type network to a mobile terminal of a GSM type network using, between the two networks, a routing gateway which breaks down an electronic message into a sequence of blocks which are encapsulated one by one in short SMS messages of the GSM network. An address translation table extracts from the message each recipient address on the INTERNET network and provides in its place a recipient address on the GSM network.

The present invention aims to propose a good compromise between the restrictions mentioned above.

To this end the invention relates to a process for transmitting data between a first data transmission device connected to a first network for transmission by packets, of the cellular telephone type, and a second transmission device connected to a second network for transmission of data by packets, of the INTERNET type, each packet of one and the other of the networks comprising a field of useful data and a signalling field, the process being characterised in that, the two networks being connected by a gateway for data adaptation and for controlling routing on the two networks, the two packet fields of the second network are transported on the first network respectively into the two counterpart packet fields of the first network.

The first network may, for example, be the networks of the type GSM 900, 1800 or 1900, CDMA One (IS 95), TDMA IS 136/IS 54, CDPD, PDC, GSM-GPRS, UMTS, WCDMA, CDMA, CDMA 2000 and WAP, or cellular telephony or any other packet transmission network type which may or may not be telephonic and/or cellular.

The proposed solution thus consists of a functional merger of the two networks for unified use which has the advantage over the general encapsulation mentioned above, of using the signalling field of the first network for signalling of both networks, thus leaving the data field fully available.

The solution thus consists, in the case of the GSM network, of permitting each SMS message sent by a terminal to comprise, in the GSM signalling field, signals indicating the IP address to which the packet containing the information contained in this SMS message will be routed via the INTERNET.

The invention will be better understood with the aid of the following description of a preferred embodiment of the process of the invention, with reference to the attached drawing in which:

- Figure 1 illustrates a network connection according to the prior art,
- Figure 2 illustrates a network connection according to the invention, and
- Figure 3 illustrates GSM packets for INTERNET packet transport.

In Figure 1, illustrating the prior art, the device 1, in this case a terminal, is connected to the network 2 for transmission of data by packets, in this case the GSM network, which is itself connected to an access service provider 9 (ISP) via the switched telephone network STN 8, connected to the INTERNET 6 to which a device 7 is connected, in this case an information data server.

Below the diagram of the networks, four logic layers 11 to 14 are shown for the transmission of data on the GSM: layer 11: circuit mode (level 1 of the OSI (Open Systems Interconnection), layer 12: SLIP or PPP (level 2), layer 13: IP routing (INTERNET address) (level 3), layer 14: TCP or UDP or others (level 4) of transport protocol. The layers 13 and 14 becomes the layers 23 and 24 as they pass into the INTERNET 6.

Figure 2, illustrating the invention, differs from Figure 1 by the fact that the STN 8, for access in circuit mode to the INTERNET 6 (operating in packet mode), has disappeared and that the provider (ISP) of access to the INTERNET is replaced by the gateway 3, 4, 5 comprising circuits 4 for adaptation of the data transmitted, such as the format, and routing circuits 3 and 5 for transmissions on the GSM network 2 and INTERNET 6 respectively. The circuits 4 are actually a Short Messages Services Centre, SMS-C.

The IP address of the server 7, called by the terminal 1, is in this case in the layer 33 in a packet message which, in this example, is of the short message type SMS, adapted to the GSM network but which can generally be any type of packet.



The layer 33, counterpart of the layer 13, corresponds to a signalling layer (OSI level 3) and, in Figure 2, there is no longer any equivalent of the lower layers 11 and 12: all the signalling is transmitted in a packet signalling channel 17 and not in the useful band 16 (Fig. 3). The layer 34 corresponds to the layer 14.

The layers 43 and 44 on the INTERNET 6 correspond respectively to the layers 33 and 34.

Apart from the address permitting routing on the "target" network 6, it is also possible to transmit point-to-point PPP (12) connection elements in the same way.

The two networks 2 and 6 having the same property of packet transmission, the INTERNET 6 of the example can send to the GSM network 2 in the same way.

The data of higher layers (TCP, UDP or the like) are contained in the "user data" part 16, which data are transported by the SMS.

The new information elements (IEs) contain all the data necessary for formatting by the SMS-C 4 and the router 5 of the IP INTERNET packets. They comprise, in particular the address of destination of the IP packet 20 and the address of origin of the packet.

The INTERNET signalling can be kept wholly or partially as it is, with a possible adaptation of form, by extending the SMS or USSD signalling protocol by new IE (Information Element) code words representing the INTERNET signalling. This is, therefore, an over-assembly of the standard GSM protocol, making it possible, for example to send INTERNET address data via the circuits 4 and the routing circuits 3 and 5. Thus code words representing signalling of the INTERNET network 6 are added to the signalling of the packets of the GSM network 2.

The standard SMS protocol is thus consequently extended according to the INTERNET signalling, in order to take account, in particular of the IP addressing.

The gateway 3, 4, 5, and in particular the circuits 3 and 4, is similarly provided to process the

SMS protocol thus extended and in particular to process the SLIP signalling (Series Line INTERNET Protocol) and/or PPP (Point to Point Protocol). The gateway 3, 4, 5 also ensures the formatting of the packets in both directions, in order to extract and reform, in a single packet 20, the fields 18 and 19 from the GSM network 2, and to send it via the INTERNET 6 by the router 5. The reverse process, of separation of the fields 18, 19 takes place for the packets 20 coming from the INTERNET 6. The terminal 1 carries out the inverse operations to those of the gateway 3, 4, 5 and thus the GSM network 2 is transparent to the INTERNET packets 20.

These destination and origin addresses and all or part of the signalling can, conversely, possibly be illustrated for their transportation by IEs already defined by the GSM protocol but which are useless, or of no purpose, in the INTERNET access applications (for example, the telephone numbers of the sender and of the receiver of the SMS). In any case, the IEs which are useless for the INTERNET applications are not used in this case. Thus any overloading of the GSM signalling field 17 is avoided.

Figure 3 illustrates the manner of transporting each INTERNET packet on the GSM network 2.

A packet 15 in GSM format comprises the field 16 of useful data which may be up to 140 bytes, and the field 17, which is more limited, of EI signalling data or Information Elements IE. The packet 20 in the INTERNET format similarly comprises a field 18 of useful data and a field 19 of signalling data. In this case, the size of the field 18 is limited to that of the counterpart field 16. In the same way, the signalling data of the field 19 can be accommodated in the field 17.

For transportation of the INTERNET packet 20 on the GSM network 2, the two fields 18 and 19 of the packet 20 are accommodated respectively in the two counterpart fields 16 and 17 of the packet 15 in GSM format.

Thus the GSM field 16 remains reserved for the useful data and thus offers them a non-

degraded pass-band.

**CLAIMS**

- 1 Process for transmitting data between a first data transmission device (1) connected to a first network (2) for transmission by packets, of the cellular telephone type, and a second transmission device (7) connected to a second network (6) for transmission of data by packets, of the INTERNET type, each packet of one and the other of the networks (2, 6) comprising a field of useful data (16, 18) and a signalling field (17, 19), the process being characterised in that the two networks (2, 6) being connected by a gateway (3, 4, 5) for data adaptation and for controlling routing on the two networks (2, 6), the two packet fields (18, 19) of the second network (6) are transported on the first network (2) respectively into the two counterpart packet fields (16, 17) of the first network (2)
- 2 Process according to claim 1, wherein code words representing signalling of the second network (6) are added to the signalling of the packets of the first network (2).
- 3 Process according to one of claims 1 and 2, wherein in order to transport the signalling (19) of the packets of the second network (6) into those of the first network (2), code words of this latter network, which have no use in connections between two such networks (2, 6), are reused.
- 4 Process according to one of claims 1 to 3, wherein the data are transmitted between a first, GSM network (2) and a second, INTERNET network (6), by accommodating INTERNET addresses in the signalling field of SMS packets.
- 5 Process according to one of claims 1 to 4, wherein at the gateway (4), the two packet fields of the second network (18, 19) are extracted from the packets coming from the first network (2) before the two packet fields of the second network are sent on the second network (6) in the form of a packet (20) of the second network (6).

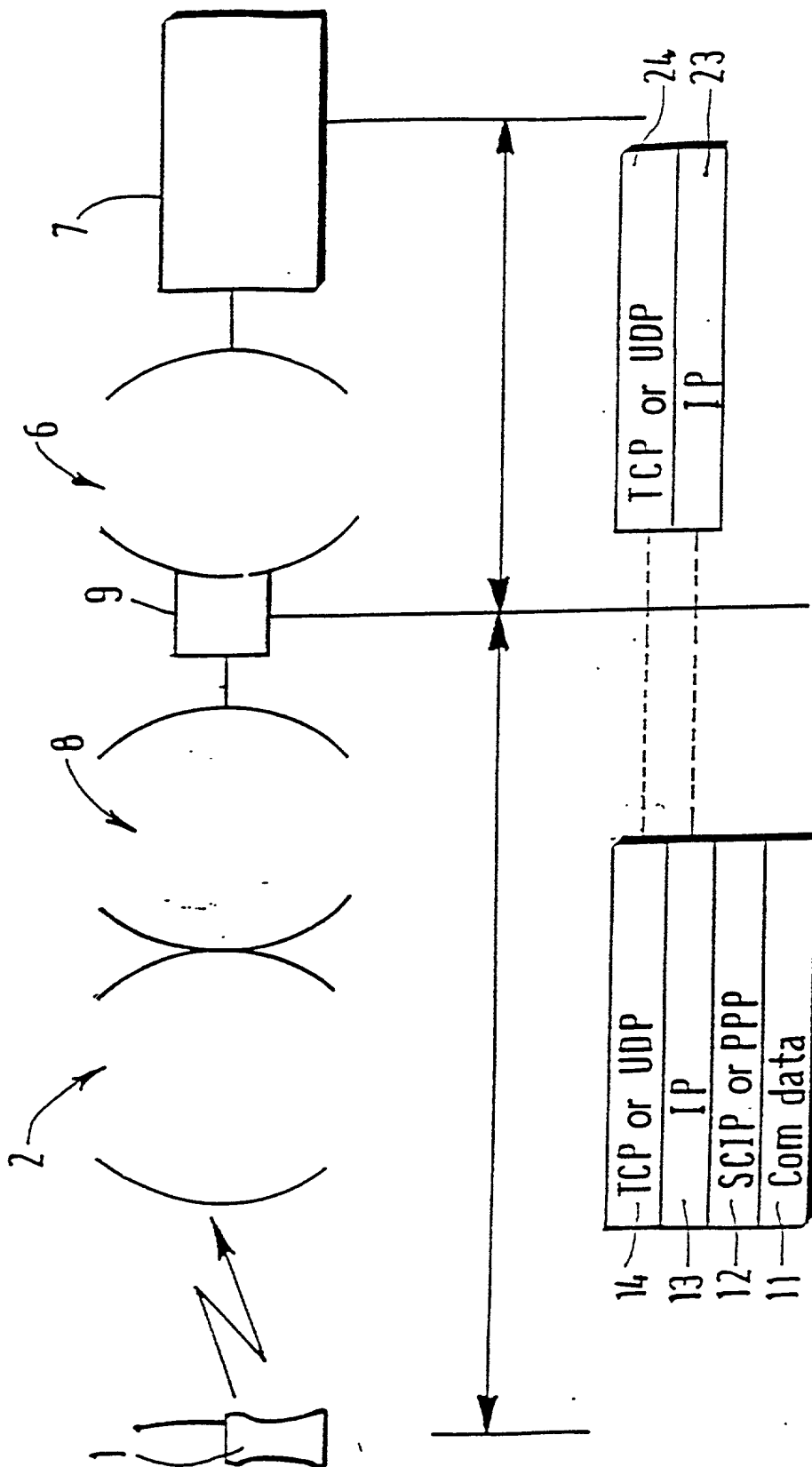
## ABSTRACT

### **Process for transmission of data between two networks in packet mode.**

The process for transmitting data between a first data transmission device connected to a first network for transmission by packets and a second transmission device connected to a second network for transmission of data by packets, of the INTERNET type, each packet of one and the other of the networks comprising a field of useful data (16, 18) and a signalling field (17, 19), the process being characterised in that the two networks are connected by a gateway for data adaptation and for controlling routing on the two networks and that the two packet fields (18, 19) of the second network are transported on the first network respectively into the two counterpart packet fields (16, 17) of the first network.

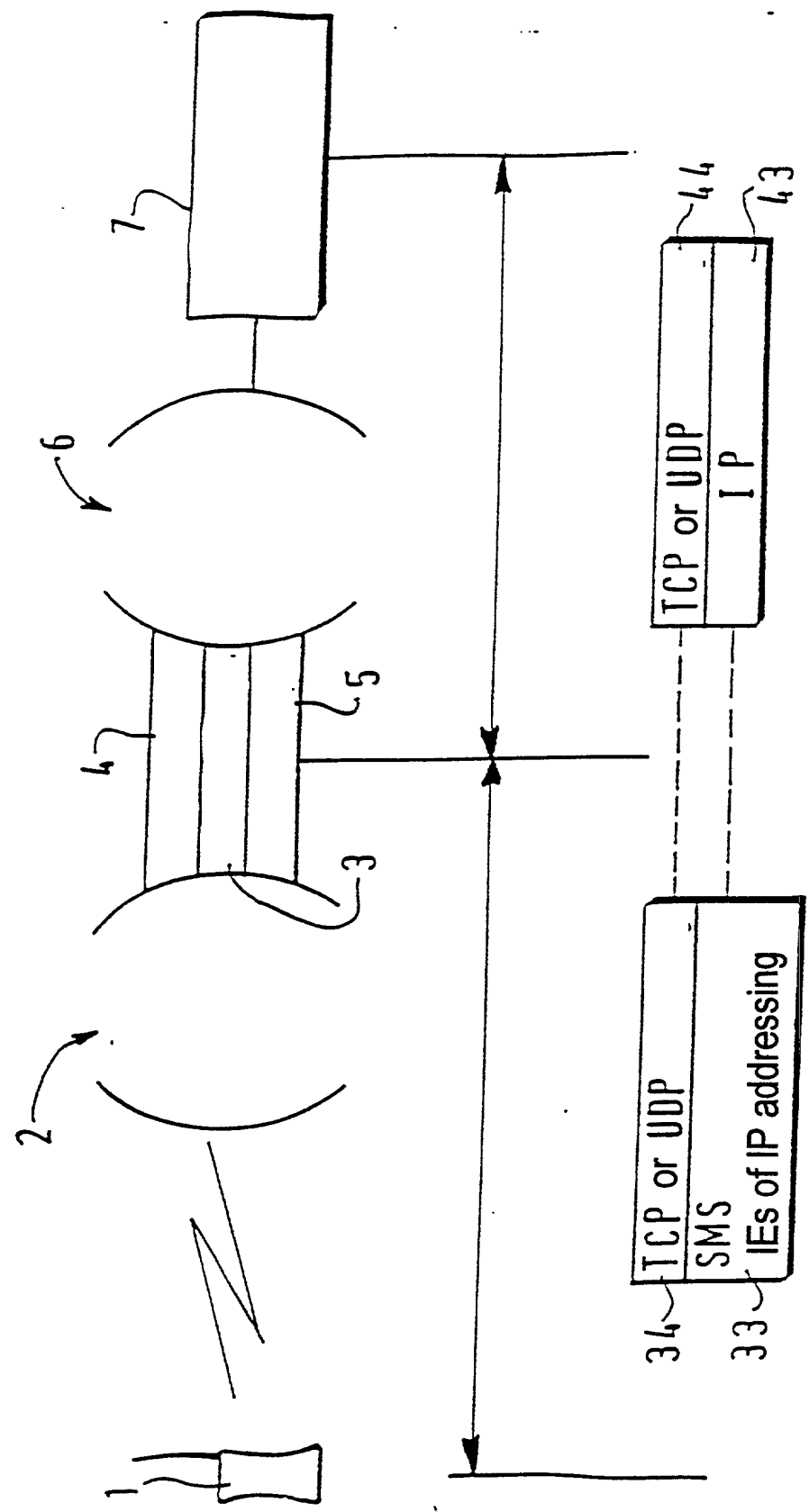
Figure 3

FIG.1



03T253 2420360

FIG.2



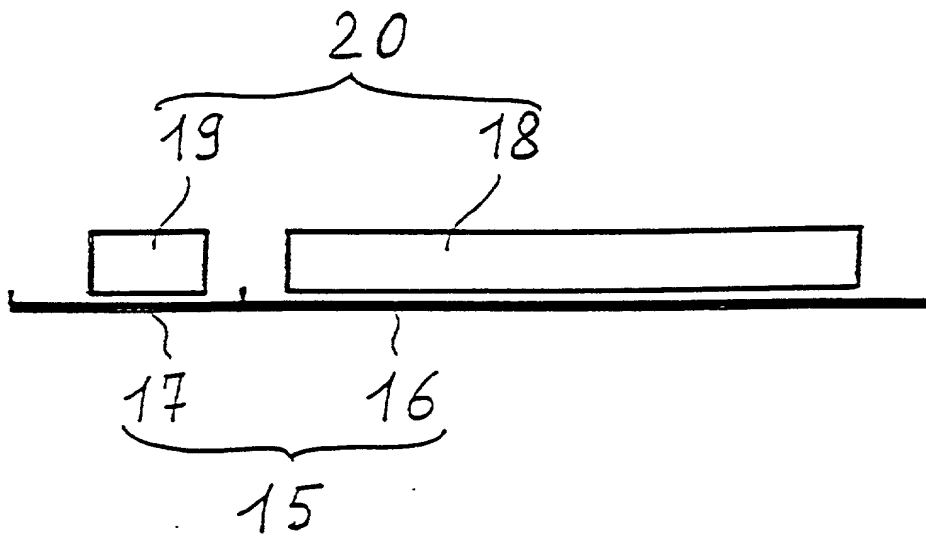


FIGURE 3



**DECLARATION AND POWER OF ATTORNEY  
FOR DESIGN AND UTILITY PATENT APPLICATION**
**ATTORNEY'S DOCKET NO.:**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled PROCESS FOR TRANSMISSION OF DATA BETWEEN TWO NETWORKS IN PACKET MODE the specification of which (check one) ☒ [X] is attached hereto, ☐ [ ] was filed on \_\_\_\_\_ as Application No. \_\_\_\_\_ and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations § 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code § 119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed: \_\_\_\_\_

98 01787	FRANCE	FEBRUARY 13, 1998	Priority Claimed <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
(Number)	(Country)	(Day/Month/Year Filed)	
98 05516	FRANCE	APRIL 30, 1998	<input checked="" type="checkbox"/> Yes

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

_____ (Application No.)	_____ (Filing Date)
----------------------------	------------------------

I hereby claim benefit under Title 35, United States Code § 120 of any United States application(s) listed below, and insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided in the first paragraph of Title 35, United States Code § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

_____ (Application No.)	② (Filing Date)	_____ (Status - patented, pending, abandoned)
----------------------------	--------------------	--

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and all continuation and divisional applications based thereon, and to transact all business in the Patent and Trademark Office connected therewith: Michael J. McGovern, Reg. No. 28,326; Michael A. Jaskolski, Reg. No. 37,551. Direct all telephone calls to Michael J. McGovern at telephone no. (414) 277-5000. Address all correspondence to: Michael J. McGovern c/o Quarles & Brady, 411 East Wisconsin Ave., Milwaukee, WI 53202-4497.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

FULL NAME OF SOLE OR FIRST INVENTOR  
Rafael ALOS

INVENTOR'S SIGNATURE  
Rafael ALOS

DATE  
September  
5, 2000

RESIDENCE  
F-95520 Osny France FRX

CITIZENSHIP  
French

POST OFFICE ADDRESS  
31 Centre de la Ravinière F-95520 Osny France